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ABSTRACT

0027 A method for forming shallow trench isolation (STI) structure including providing a substrate comprising an overlying hardmask layer; patterning the hardmask layer to form a hardmask layer opening for etching a trench through a substrate thickness portion; etching a trench according to the patterned overlying hardmask layer; carrying out a wet chemical oxidizing process to form an oxidized surface portion on the hardmask layer; carrying out a wet chemical etching process to remove at least a portion of the oxidized surface portion to form the hardmask opening having an enlarged width and the trench opening comprising rounded upper corners; and, forming a completed planarized STI structure filled with oxide.